



# IMPACT OF VIRTUAL REALITY AND LIBRARY WEBSITES ON THE UTILIZATION OF LIBRARIES AND INFORMATION RESOURCES IN ACADEMIC LIBRARIES IN IMO STATE, NIGERIA.

By

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## Abstract

**Purpose:** *The main purpose of this work is to investigate the impact of virtual reality and library websites on the utilization of library and information resources in academic libraries in Imo State, Nigeria. In addition, it sought to determine the extent of the relationship between virtual and the utilization of information resources and services. And as well as certain the extent of relationship between the creation of a library website and the utilization of information and services in academic libraries in Imo State, Nigeria*

**Design/ Methodology/Approach:** *The study adopted correlational research design in correlating the two major variables of the study. A total of twenty-six (26) professional library staff formed the population of the study. The study was carried out using a four point rating scale as the instrument for data collection. The data collected were analysed using the Pearson-Product-Moment correlation coefficient and presented in tables. Whereas t-test statistical formula was used to test the hypothesis*

**Findings:** *The findings of the study are that: there is a significant and positive relationship between Virtual Reality and users' utilization of information resources and services. There is also a significant and strong positive relationship between the library website users' utilization of information resources and services in academic libraries in Imo State.*

**Practical Implications:** *Virtual Reality and library websites are major determinants for users' utilization of library and information resources and services in academic libraries. It implies that the integration of VR technology and effective website design can enhance user engagement, promote the utilization of library resources and foster a more interactive and immersive learning environment in our tertiary institutions.*

**Originality/Value:** *The value of this work is on the identification of the extent of relationship between Virtual Reality, library websites and utilization of library and information resources in academic libraries. It's originality lies in the fact that it has not been published elsewhere.*

**Keywords:** *Library information resources, Library Services, Utilization of library Resources and Services, Virtual Reality, Library Website.*

## Introduction

Libraries today face unprecedented competition due to rapid technological advancements and the proliferation of online information sources. Nonetheless, they remain vital as community hubs, offering

expertly curated resources, free access, and opportunities for lifelong learning (Urban Libraries Council, 2022). Libraries (whether

physical or virtual) contain collections of books, journals, databases, and other media,

carefully organized to meet the needs of their communities. They include school, public, national, special, and academic libraries. Academic libraries, in particular, are situated in institutions of higher learning to support the teaching, learning, and research needs of students, faculty, and staff (Association of College and Research Libraries, 2020).

Information resources, defined as materials and tools used to satisfy patrons' information needs, may be print or non-print. Print formats include books, periodicals, reports, and conference papers, while non-print formats include audio-visuals, internet resources, and websites (Taiwo, Ayandare & Olurola, 2015). These resources are closely linked to library services, which aim to maximize resource value and enhance user experience. Services such as user education, reference assistance, lending, current awareness, reprographics, bibliographies, internet access, and extension activities help users access, evaluate, and utilize information effectively (American Library Association, 2020). Utilization of resources involves identifying, locating, accessing, and applying information to meet specific needs (Vashistha & Hussain, 2018), and it often requires a catalyst for greater engagement.

Publicity serves as this catalyst, with tools such as Virtual Reality (VR) and library websites enhancing visibility and user interaction (Nwokedi & Ogundare, 2015). VR offers immersive experiences that transform information access and service delivery (Hahn, 2018; Dahya et al., 2021). Components such as head-mounted displays, tracking systems, and software enable innovative library services. Library websites, acting as gateways to resources, extend access and promote services beyond physical walls (Mandrekar & Rodrigues, 2021). Together, VR and websites can

significantly boost the utilization of library resources and services.

### **Statement of the Problem**

Academic libraries serve as vital knowledge hubs, supporting teaching, learning, research, and community service. They provide a vast array of information resources and services, including books, journals, databases, and digital collections. Despite these offerings, many academic libraries face the challenge of underutilization. Observations suggest that students often overlook the library's potential, only utilizing its serene environment during exam periods or for specific assignments. The underutilization of library resources and services persists, raising questions about the factors contributing to this trend.

This study investigates the impact of virtual reality (VR) and library websites on the utilization of library information resources and services. Specifically, it explores whether the integration of VR technology and effective website design can enhance user engagement, promote the utilization of library resources, and foster a more interactive and immersive learning environment.

### **Research Questions**

In line with the stated objectives of the study, the following research questions were formulated to serve as a guide to the study on the influence of publicity on the utilization of academic library resources and services.

1. What is the extent of the relationship between Virtual Reality and students' utilization of information resources and services in the academic libraries studied?
2. What is the extent of the relationship between the creation of a library websites and students' utilization of information resources and services in academic libraries studied?

## Hypotheses

The following hypotheses were formulated for the study and tested at 0.05 levels of significance.

1. **H<sub>01</sub>**: There is no significant coefficient of relationship between Virtual Reality and the utilization of library resources and services in the university libraries studied.
2. **H<sub>02</sub>**: There is no significant coefficient of relationship between Library Website and utilization of library resources and services in the academic libraries studied.

## Literature Review

### Academic Libraries

Academic libraries are Information hubs that serve the information needs of students, faculty, and staff at a college or university. They are information-providing environments owned and incorporated into tertiary institutions such as universities, polytechnics, mono-technic, colleges of education, colleges of agriculture, colleges of technology, and research institutes (Azuike, 2021). Lui (2021) gave a similar definition that they are libraries that serve institutions of higher learning such as colleges or universities. The academic library is that library affiliated with an institution of higher education and has the primary mission to support the teaching, research, and learning needs of its students, faculty, and staff (Association of College and Research Libraries, 2019). Mayombia, Nnwatimwa & Nngeje-Sichaiwe (2019) stated that the purpose of the academic library is to support the teaching, learning, and research needs of the parent institution, generate knowledge and people equipped with knowledge to serve the society as well as advance the wellbeing of mankind. According to Smith (2020), academic libraries are dynamic, inclusive, and technology-rich environments that foster collaboration, creativity, and critical

thinking. They provide access to diverse information resources, expert librarians, and innovative services that support the academic success of students, faculty, and staff.

### Library Services

The library, which is a humanitarian institution, offers many services which are vital to educational, entertainment and knowledge gain of the users. Libraries offer various forms of support to help users access, evaluate, and utilize information resources effectively, meeting their specific information needs, they comprise a range of activities, including reference, instruction, and outreach, aimed at facilitating information access and promoting learning (Association of College and Research Libraries, 2019). Libraries provide various activities to support users' information needs, including access to collections, research assistance, and technology support (IFLA, 2018) According to the Urban Libraries Council (2022), library services encompass a variety of programs, services, and resources designed to support the diverse information needs of students, faculty, and staff. Katz (2017) stated that library services act as a bridge between users' information needs and library resources, offering a range of services that facilitate information access, discovery, and use. These services are aimed at making library users enjoy all the benefits accruable from the library.

### Information Resources

The instruments that keep a library running are its information resources; without them, it would already be history. According to Kaur and Rani (2007), they are instruments that the librarian employs to assist the patrons. He went on to say that they are the results of all the user-beneficial acquisition, processing, organization, and

providing actions. Since the community of users views these information resources as library products, their suitability for their needs must be assessed (Taiwo, Ayandare & Olusita, 2015). Books, journals, databases, and websites are just a few examples of the many items, instruments, and sources that make up information resources (American Library Association, 2020).

Physical and digital collections, databases, and online resources are all considered information resources, providing access to information and supporting various needs (Urban Libraries Council, 2022). According to Popoola and Haliso, as cited in Buhari (2016), an academic library's effectiveness hinges on two crucial factors: an adequate collection of information resources and a team of sufficiently trained information professionals. Information resources encompass a broad range of materials in both print and electronic formats, including but not limited to: Journals and textbooks, abstracts, indexes, databases, magazines, newspapers, and reports, digital media like diskettes, magnetic disks, and compact disk read-only memory online resources such as the internet, email, and video content, microforms, and computer systems. The backbone of teaching, learning and research in any discipline is information resources (Maxwell, 2018).

### **Utilization of Information Resources and Services**

The utilization of information resources and services refers to the use of libraries, databases, and other information sources to meet the information needs of individuals or organizations. The components of utilization include information access, information literacy, information use, and user engagement. An article by IFLA (2019) stated that the utilization of information resources and services is a critical aspect of library

services that involves the effective use of libraries, databases and other information sources to meet the information needs of individuals or organizations.

In order to ensure that there is effective utilization, the library has to develop user-centered services that meet the diverse needs of the community, provide access to diverse information resources, offer information literacy programs to equip users with essential skills and foster partnerships and collaborations to expand access to information resources and services. Furthermore, continuous access and evaluation of the utilization of information resources and services to inform improvement, embrace digital technologies to enhance access to information resources and services, foster inclusive and diverse collections that reflect the needs of the community, develop strategic partnerships with other libraries, institutions, and organizations, support continuous professional development for library staff to enhance their skills and knowledge are others ways of ensuring effective library utilization. According to a study by Tenopir, Christiansen & Kaufeldt (2020), the utilization of information resources and services includes:

1. Information seeking: Identifying and locating relevant information sources.
2. Information retrieval: Accessing and obtaining relevant information.
3. Information evaluation: Assessing the quality and relevance of information.
4. Information use: Applying information to meet a specific need or solve a problem. (3-5)

### **Virtual Reality (VR) and the Utilization of Information Resources and Services**

Virtual reality (VR) is a computer-generated simulation that recreates a realistic environment, allowing users to immerse themselves in a virtual world. This technology combines multi-source

information, interactive 3D visuals, and dynamic entity behavior, creating a lifelike experience (Luo, 2017). Virtual reality (VR) is transforming university libraries by providing immersive, user-centric environments that enhance learning experiences. By leveraging VR applications, librarians can design engaging virtual tours and information literacy programs, fostering a culture of lifelong learning and skill development (Cerbo, 2015; Massis, 2015; Oyelude, 2018).

Virtual reality (VR) is a computer-generated simulation that recreates real-world settings and situations, allowing users to interact with them through special electronic devices (Li et al., 2017). By wearing a headset, users can experience immersive visual, audio, and sensory feedback, creating an illusion of presence in a virtual environment.

**This definition highlights VR's key features:**

1. Immersive simulation: Recreates real-world settings and situations
2. Interactive: Allows users to engage with the virtual environment
3. Sensory experiences: Provide visual, audio, and other sensory feedback

By leveraging these features, VR technology can transport users to new and imaginative worlds, revolutionizing fields like education, entertainment, and research.

Research suggests that librarians have favorable attitudes toward VR-based applications due to their positive impact on user learning experiences (Greene and Groenendyk, 2021, as cited by Shahzad, K, 2025). As VR becomes increasingly important in education, librarians are likely to play a key role in curriculum development, virtual events, and integrating VR into teaching practices (Hannah et al.,

2019; Sams and Leither, 2021; Ellern and Cruz, 2021; Katz and Cook, 2022). By leveraging VR technology, librarians can transform library services, enhance operational efficiency, and contribute to academic growth (Valenti et al., 2020; Huber et al., 2021; Lin et al., 2021; Schone et al., 2023; Ogbomo, 2022).

Studies have shown that Virtual Reality (VR) can positively influence student attitudes by boosting engagement and self-efficacy (Lischer-Katz et al., 2018). In essence, VR technology can:

1. Increase student engagement and self-efficacy (Lischer-Katz et al., 2018)
2. Support researchers' analytical tasks through immersive visualization (Donalek et al., 2014) These findings suggest that incorporating VR equipment in academic libraries can have a significant impact on learning, research, and user experiences and overall utilization of library information resources and services.

**Library Websites and the Utilization of Information Resources**

Websites also known as web portals are the new way to access, deliver, and promote library information center resources & services (Mandrekar & Rodrigues, 2021). Thanks to websites and the internet, this has made access to information much easier, allowing for better services provided by libraries in communities worldwide. Websites are beneficial in ways such as improved ability to generate and process information, Information access on demand which allows users to get all the knowledge they need from any place that has an internet connection (at their own pace), Convenience meaning websites can be accessed at any time of day or night around the world.

Websites have essentially transformed the way that information is distributed and consumed by making it easier to find and more accessible. Academic libraries now function as contemporary hubs utilizing artificial intelligence (AI) and information communication technology (ICT), rather than as antiquated repositories, thanks to the World Wide Web. According to Mandakar and Rodrigues (2021), the library website functions as a digital version of the physical library, showcasing its materials and services. Researchers' efforts in the second decade of the twenty-first century have seen a noticeable shift from print to digital resources. Sadly, the majority of university library websites fall short in this area, offering scant or out-of-date material that consumers can trust. This problem can be fixed by designing and updating the library websites in such a way that they provide authentic, best available information for meeting the changing information needs of the academic community.

For effective utilization of the library resources and services, a well-organized and user-friendly website is essential. According to Edom and Nnadozie (2015), a library website is a means of relating to the people both nationally and internationally about what the library offers. Any information about the library such as the staff, stock, operations, services, catalogs, opening and closing hours, location of the library, registration, requirements, and lending process is included in the information website. The author also stated that with this information on the website, users can have access to them from any location and decide to use the library physically or make their request known via the web.

The library website has a significant impact on the utilization of information resources and services in the library (Kumar & Kumar, 2018). A well-designed library website can enhance user experience,

increase accessibility, and promote the discovery of library resources (Chowdhury & Chowdhury, 2018). Studies have shown that a user-friendly library website can lead to increased usage of digital resources, improved information literacy, and enhanced research skills (Huang & Yang, 2019).

Furthermore, a library website can also facilitate remote access to library resources, extending the reach of library services beyond physical boundaries (Siddique & Mahmood, 2020). A study conducted by Sharma and Sharma (2020) examined the relationship between library websites and the use of information resources and services in academic libraries. The results showed that 85% of respondents said they used the resources and services more after the website was launched, 90% said they found the website easy to use, and 80% said they were able to access the resources and services more easily from a distance. These findings imply that the library website is important for encouraging the use of information resources and services and that a well-designed and a well-designed and user-friendly website can lead to increased usage and satisfaction with library resources and services.

### **Methodology**

The study adopted correlation research design. It was carried out in Imo State University, Alvan Ikoku Federal University of Technology and Federal Polytechnic Nekede, Owerri Library. The population consists of 26 professional librarians from the three libraries studied. Census enumeration method was adopted due to the small number of the population. The instrument used for this study is rating scale. The instruments were completely filled and returned. Data collected for this study were analyzed using the Pearson Product Moment-Correlation coefficient. The Pearson correlation coefficient ( $r$ ) ranges

from +1 to -1, indicating: - Positive association ( $r > 0$ ): Variables increase together,  
 - Negative association ( $r < 0$ ): One variable increases as the other decreases, - No association ( $r = 0$ ): No relationship between

variables. Hypotheses were tested using a t-test with a 0.05 significance level. Decision rule: - Reject null hypothesis ( $H_0$ ) if  $p$ -value  $\leq 0.05$  or  $t$ -calculated  $>$   $t$ -table, - Uphold alternate hypothesis ( $H_A$ ) if null hypothesis is rejected.

**Presentation of Data Analysis**

**Table 1**

**Summary Table for the Extent of Relationship between Virtual Reality(VR) and Users' Utilization of Information Resources and Services**

Group	<i>n</i>	<i>r</i>	<i>r</i> <sup>2</sup>	<i>Decision</i>
Utilization of Res & Serv VR	26	0.867	0.752	Positive and strong relationship

The analysis for this research question is summarized in Table 1. The correlation coefficient  $r=0.867$  indicates a positive and strong relationship between VR and the utilization of library resources and services by students. The coefficient of determination  $r^2 = 0.752$  suggests that approximately 75.2% of the variance in

users' utilization of resources can be explained by the use of VR.

**Hypothesis One:** There is no significant relationship between the use of Virtual Reality and the utilization of library resources and services in the university libraries studied.

**Table 2**

**Summary t-test Statistics for Testing Hypothesis One**

<i>n</i>	<i>df</i>	<i>t</i> <sub>Cal</sub>	<i>p</i>	<i>t</i> <sub>Crit</sub>	<i>α</i>	<i>Decision</i>
26	24	8.524	<0.001	2.064	0.05	Reject $H_{01}$

Table 2 presents the t-test statistics used to test this hypothesis. The calculated t-value ( $t_{Cal} = 8.524$ ) is significantly greater than the critical t-value ( $t_{Crit} = 2.064$  at  $\alpha=0.05$ ). Additionally, the p-value is less than 0.001, leading to the rejection of the null hypothesis  $H_{01}$ . This result indicates that there is a statistically significant relationship between the use of VR and the utilization of library resources and services.

**Results of Data Analysis and Tests concerning Research Question Two and Hypothesis Two**

**Research Question Two:** What is the extent of the relationship between the Library Website and users' utilization of information resources and services in the academic libraries studied?

**Table 3**

**Summary Table for the Extent of Relationship between the Library Website and user's Utilization of Library Resources and Services**

Group	<i>n</i>	<i>r</i>	<i>r</i> <sup>2</sup>	<i>Decision</i>
Utilization of Res & Serv Website	26	0.653	0.426	Positive and strong relationship

Table 3 shows the analysis for this research question. The correlation coefficient  $r = 0.653$  indicates a positive and strong relationship between library website and the utilization of library resources and services. The coefficient of determination  $r^2 = 0.426$  means that about 42.6% of the

variance in resource utilization can be attributed Library Website.

**Hypothesis Two:** There is no significant relationship between library website and the utilization of library resources and services in the university libraries under study.

**Table 4**

**Summary t-test Statistics for Testing Hypothesis Two**

<i>n</i>	<i>df</i>	<i>t<sub>Cal</sub></i>	<i>p</i>	<i>t<sub>Crit</sub></i>	<i>α</i>	<i>Decision</i>
26	24	4.224	<0.001	2.064	0.05	Reject H <sub>02</sub>

As shown in Table 4, the t-test results for this hypothesis provide a t-value  $t_{Cal} = 4.224$ , which is significantly higher than the critical t-value  $t_{Crit} = 2.064$ . The p-value is also less than 0.001, thus rejecting the null hypothesis H<sub>02</sub>. Therefore, there is a significant relationship between the library website and the utilization of library resources and services.

### Summary of Findings

From the results of data analyses presented in this chapter, the following findings were made.

1. There is a significant and positive relationship between Virtual Reality and users' utilization of information resources and services in the academic libraries studied.
2. The study found a significant and strong positive relationship between the library website users' utilization of information resources and services in the academic libraries studied.

### Conclusion.

This study investigated the impact of Virtual Reality (VR) and Library Websites on the utilization of library information resources and services in academic libraries in Imo State. The findings revealed that the integration of VR technology and well-designed library websites significantly enhances users' utilization of library resources. The study highlights the potential of VR to provide immersive learning experiences and the importance of library websites in providing remote access to resources and services. By leveraging these technologies, academic libraries can maximize users' engagement and ensure that students effectively utilize the wealth of resources available to them.

### Recommendation

Based on the findings of the study on the impact of VR and Library websites on the utilization of library information resources and services in academic libraries in Imo

State, the following recommendations were made

1. Academic libraries should integrate Virtual Reality (VR) technology to enhance the utilization of library information resources and services. This can be achieved by: Developing VR-based content and experiences that showcase library resources and services, providing VR equipment and training for students and librarians, and collaborating with faculty to integrate VR into the curriculum and research.
2. Academic institutions should prioritize the development and maintenance of user-friendly library websites. This can be achieved by ensuring websites are regularly updated with comprehensive information on library resources and services, providing remote access to library resources and services, and designing websites with user experience in mind to facilitate easy navigation and discovery of library offerings. These recommendations aim to leverage VR technology and library websites to promote the utilization of library resources and services, enhancing the overall academic experience.

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